Relation of the Peripheral Vaso-Motor Centres to Temperature.

LEWASCHEFF (Pflüger's *Archiv*, vol. xxvi. p. 60) subjects to renewed experimental inquiry the contradictory statements regarding the action of heat and cold on the vessels. According to most observers, the primary effect of cold is constriction, that of warmth dilatation. According to the later observations of Dziedzjul, the reverse is the case, namely, constriction in a medium above 15° Cent. (59° Fahr.), dilatation below 15°. The author experimented upon amputated limbs of dogs, in which an artificial circulation of defibrinated blood was maintained. Nerves and muscles then remained excitable at the end of eight to ten hours, during which period spontaneous contractions were occasionally observed; he judged of the calibre of the vessels by pressure, by rapidity of outflow, and by temperature. He comes to the conclusion that increase of temperature causes dilatation, and diminution of temperature constriction; and that the greater the increase, the greater the dilatation, and the greater the diminution the greater the constriction. These results did not occur with dead limbs, and the changes were, therefore, due to vital activity of the arterial walls. In order to determine the share in the changes of vaso-motor fibres and centres, the author experimented on limbs of which the nerves had been cut a month previously to insure their complete degeneration; the changes were as before. Seeing that Samkovy and Gruenhagen (*Archiv*, 1874, p. 399; and 1879, p. 165) have shown that smooth muscle relaxes with diminution of temperature, and contracts with increase of temperature, the author attributes the above changes to peripheral centres, and not to direct action on the arterial muscle.—*London Med. Record*, April 15, 1882.

Influence of the Nervous System on the Lymphatics.

MM. PAUL BERT and LAFFONT, in a note communicated to the Académie des Sciences, point out that the lymphatic vessels behave, in the presence of physical excitants, exactly as do the bloodvessels. All are agreed in referring the dilatation and contraction of the latter to the influence of the nervous system, but no one has hitherto endeavoured to ascertain whether the lymphatic vessels are under the same influence. The authors have, therefore, made experiments in order to ascertain whether this is the case. The abdomen of an animal during the process of digestion was opened under tepid water, so as to avoid the influence of the air and cold on the abdominal lymphatics. The mesenteric nerves were then stimulated electrically, and on this the lymphatic vessels were observed gradually to shrink and disappear. In another animal the splanchnic nerves were similarly stimulated by a voltaic current so feeble that when applied to the tongue it could scarcely be perceived, and the same vessels were then seen to swell and to become turgescent. If the pneumogastric nerves were divided and the peripheral extremities stimulated, besides the peristaltic movement of the first part of the intestine, there was observed first a transient dilatation, and then a considerable and permanent dilatation of the lymphatic vessels. It seemed important to ascertain whether the same effects could be produced in curarized animals. Claude Bernard showed that the pulsation of the lymphatic hearts of the frog ceases under the influence of curara at the same time as the function of the motor nerves of the muscles is suspended. Experiment shows that the same effect is not produced on the lymphatic vessels. Under normal conditions, when the mesenteric nerves are stimulated the lymphatic vessels contract; but under the influence of curara, stimulation of the mesenteric nerves, or of the splanchnic nerves, causes dilatation of these vessels. It is, however, necessary to ask whether the change in the size of the lymphatic vessels may not be a secondary effect of the action of the nerves stimulated, upon the blood-pressure in the intestinal vessels. To this an answer is supplied by further experiments, which show that the changes in the lymphatics are entirely independent of the condition of the bloodvessels. The section of the mesenteric nerves which causes turgescence ot the bloodvessels does not interfere with the normal course of the chyle, and causes no modification in the size of the chyliferous vessels. Nor has ligature of the arteries any influence on the size of the related lymphatic vessels. Some experiments have also been made on larger animals, the ass and the horse. In these, under the influence of electrical stimulation of the peripheral extremity of the trigeminus, the lymphatic vessels of the upper lip were observed to become varicose, and to form a pale prominence beneath the mucous membrane. The investigators have also succeeded in reproducing, in the chyliferous lymphatics and thoracic duct of the dog, the experiments of Gubler on the veins of the hand. A slight tap on the vessel caused a narrowing which passed gradually onwards and was succeeded by dilatation.—*Lancet*, April 29, 1882.

Pancreatic Digestion.

The functions of the pancreatic secretion in the process of digestion have been considerably but by no means exhaustively studied. A fresh series of experiments on the subject has been made by M. DUCLAUX, and described in a paper which he has communicated to the Académie des Sciences. The facts he mentions deserve notice, although they are not altogether novel. A small fragment of the pancreas will liquefy starch, leaving intact only the outer capsule of the starch grain, which is also unaffected by the diastase of germinating barley. This external capsule, if isolated, is not coloured blue by iodine unless treated also with sulphuric acid. It is variable in thickness in different kinds of starch, and seems thus to consist of true cellulose. Except this residue all the starch is dissolved. Duclaux thinks the action is too rapid to be attributed to a ferment. He points out also that the action of the pancreas on albuminoid material is not at present very clearly understood. If one or two milligrammes of pancreas are introduced into ten cubic centimetres of milk, the liquid, at the end of a few hours, is no longer coagulated by acids, even nitric, nor by acidulated ferrocyanide of potassium, and it is, moreover, clear. The pancreas thus plays an important part in the digestion of milk, which may be one of the reasons why milk diet is so useful in diseases of the stomach. In cooked meat, under the same conditions, the muscular fibres are broken up, especially towards the extremities, where they are not protected by the sarcolemma. The interfibrillary substance becomes dissolved, and so the fibrillæ become separated. The difference in action of the gastric juice and pancreatic secretion may be roughly summarized by stating that the former breaks up the fibre transversely and the latter longitudinally. But the effect is not limited to this longitudinal dissociation. The cooked meat is gradually transformed into alimentary pulp, which closely resembles that produced by the gastric juice, but there is never complete solution, although the tissue elements which resist are too small to permit their actual nature to be determined. It is clear, however, that the pancreatic juice has no power than that of the stomach to digest indifferently the various albuminoid bodies. Another fact points to the same conclusion. The fragments of the pancreas themselves remain unchanged even after a very prolonged sojourn in the stove. Contrary to what is sometimes asserted, the pancreas cannot digest itself. When this takes place, it is only through the agency of the organisms of putrefaction. This presents a fresh instance of the law that every living cell consists of elements which are impregnable in its vital conditions to the ferments which it may secrete.—*Ibid.*, April 29, 1882.